

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in this application.

The following amendments do not constitute an admission regarding the patentability of the amended subject matter and should not be so construed. Applicant reserves the right to pursue the subject matter of the canceled claims in this or any other appropriate patent application.

Claims 1-53 have been cancelled. Claims 54-63 have been added. These amendments introduce no new matter and their entry is respectfully requested.

**Listing of Claims:**

Claims 1-53. (Cancelled).

54. (New) A method for identifying a ligand that binds to a protein, comprising the steps of:

- (1) receiving unfolding data that indicates thermal unfolding as a function of temperature for a protein incubated with a molecule tested for binding;
- (2) determining an unfolding temperature for the protein in the presence of the molecule from the unfolding data;
- (3) comparing the unfolding temperature midpoint for the protein incubated with the ligand with the unfolding temperature midpoint for the protein in the absence of any molecules tested for binding; and
- (4) determining that the molecule tested for binding binds to the protein when a difference between the unfolding temperature midpoint for the protein in the presence of the molecule and unfolding temperature midpoint for the protein in the absence of any molecules tested for binding exceeds a threshold.

55. (New) The method according to claim 54, wherein step (2) comprises the step of plotting thermal unfolding as a function of temperature for the protein incubated with the molecule, and determining the unfolding temperature midpoint for the protein in the presence of the molecule from the plot.

56. (New) The method according to claim 55, further comprising the steps of:

(5) receiving data that indicates thermal unfolding as a function of temperature for the protein in the absence of any molecules tested for binding;

(6) plotting thermal unfolding as a function of temperature for the protein in the absence of any molecules tested for binding; and

(7) determining the unfolding temperature midpoint for the protein in the absence of any molecules tested for binding from the associated plot.

57. (New) The method according to claim 54, wherein the molecule that binds is a ligand, and further comprising the step of:

(5) estimating ligand binding affinity.

58. (New) The method according to claim 57, wherein step (5) comprises the step of estimating the ligand binding affinity at the unfolding temperature midpoint.

59. (New) The method according to claim 54, wherein step (1) comprises the step of receiving fluorescence data.

60. (New) A computer program product comprising a computer useable medium having control logic embodied in said medium, for causing a computer to process thermal unfolding data, said control logic comprising:

a thermal unfolding data generating routine that causes the computer system to generate thermal unfolding data from fluorescence information received from a plurality of samples;

a thermal unfolding curve generation routine that causes the computer system to generate thermal curves from the thermal unfolding data; and

a thermal unfolding curve comparison routine that causes the computer system to compare the thermal unfolding curves.

61. (New) A computer program product comprising a computer useable medium having control logic embodied in said medium, for causing a computer to process thermal unfolding data, said control logic comprising:

    a thermal unfolding data generating routine that causes the computer system to generate thermal unfolding data from fluorescence information received from a plurality of samples;

    a thermal midpoint determining routine that causes the computer system to determine the thermal unfolding midpoint temperatures from the thermal unfolding data; and

    a thermal midpoint comparison routine that causes the computer system to compare the thermal unfolding midpoint temperatures.

62. (New) The computer program product according to claim 61, wherein said thermal midpoint determining routine comprises a thermal unfolding curve generation routine that causes the computer system to generate thermal curves from the thermal unfolding data and to determine the thermal unfolding temperature midpoints from the curves.

63. (New) The computer program product according to claim 61, wherein said control logic further comprises:

    a positioning control routine that causes the computer system to control a positioning system for the plurality of samples.